

Title: Wendy Wheels Gets Her Wish House

Brief Overview:

A major toy company has recently created a doll that is physically challenged. The doll is confined to a wheel chair. Unfortunately, the company did not consider housing adaptations that would meet the doll's needs.

Links to Standards:

- **Mathematics as Problem Solving**
Students will demonstrate their ability to solve problems in mathematics using given manipulatives, prior knowledge, and cooperative learning.
- **Mathematics as Communication**
Students will demonstrate their ability to communicate mathematically. They will read, write, and discuss mathematics terms to convey information to others.
- **Mathematics as Reasoning**
Students will demonstrate their ability to reason mathematically. They will use prior knowledge and gathered data to support new ideas.
- **Mathematical Connections**
Students will demonstrate their ability to connect mathematical topics to design housing accommodations for the physically challenged.
- **Estimation**
Students will hypothesize ideas and estimate their results.
- **Number Sense and Numeration**
Students will demonstrate their ability to apply strategies in computation, measurement, and in process problem solving.
- **Whole Number Computation**
Students will demonstrate their ability to compute whole numbers in finding perimeter and area for a given region.
- **Geometry and Spatial Sense**
Students will demonstrate their ability to apply geometric relationships using two and three dimensional objects. They will find area and perimeter. They will construct angles and geometric objects.

- **Measurement**
Students will demonstrate applications and apply concepts of measurements by using non-standard and standard units. Students will use protractors, compasses, rulers, and grids to accurately identify measures.
- **Statistics**
Students will demonstrate their ability to collect, organize, graphically display, and interpret data.
- **Probability**
Students will demonstrate basic concepts of probability such as predicting and finding probable outcomes.

Grade/Level:

4 and 5 (modifications and enrichments suggested for students with special needs)

Duration/Length:

Seven lessons at 45 minutes each

Prerequisite Knowledge:

Students should have working knowledge of the following:

- Cooperative learning activities/roles
- FAT-P Organizer
- Organizing, displaying, and interpreting data
- Use of geometric tools
- The components of a business letter
- Measurement experience (measuring angles, area and perimeter; use of grid paper)
- Reading and interpreting a diagram
- Use of pattern blocks, geoboards and other geometric manipulatives
- Experience of assessment using a rubric
- Geometric shapes and terms
- Persuasive writing

Objectives:

Students will:

- work cooperatively in groups.
- use mathematics to solve process problems (real-world situations).
- collect, organize, and interpret data.
- solve mathematical problems.

- use geometric problem solving skills using geometric tools.
- write a persuasive letter.

Materials/Resources/Printed Materials:

- | | |
|---|------------------------------|
| ● scissors | Optional: geoboard, pegboard |
| ● ruler | pattern blocks |
| ● protractor | magazines |
| ● safety compass | unifix cubes |
| ● chart paper/board | cusinaire rods |
| ● business letter form | calculator |
| ● wheelchair/office chair with wheels | |
| ● overhead projector and transparencies | |
| ● paper | |
| ● pencils | |

Development/Procedures:

Activity 1 (30 minutes):

- Introduce Teacher Resource #1 (overhead) to class. Discuss with class.
- Arrange students in triads.
- Hand out and explain directions to Student Resource #1. Give students time to complete the activity.
- Share responses and list responses on a class chart.

Activity 2 (1 hour):

- Review vignette and chart from Activity 1.
- Reorganize in triads.
- Hand out SR #2. Explain directions.

Activity 3 (20 minutes):

- Teacher will share Teacher Resource #2, the journal prompt (overhead). Students will complete a journal entry.

Activity 4 (60 minutes):

- Discuss previous days' activities.
- Students will use 1 cm cubes to build items into a typical doll house. Items will be placed on the house plan.

Accommodations:

Use a large section of a peg board or a geoboard to construct their floor plans. The students may want convert their floor plans into a three-dimensional product. They could use shoe boxes, cardboard and other materials such as wood to create their doll houses.

Activity 5:

- Distribute and explain Student Resources #8 and #9.
- Have students complete FAT-P organizer on Student Resource #8.
- Review business letter format.

Performance Assessment:

Assessment of students' progress during this unit can be evaluated daily using anecdotal notes. Students are expected to demonstrate the ability to achieve all objectives by actively and cooperatively solving process problems. Two rubrics are used to formally assess students' progress. It is expected students show appropriate behavior and complete all tasks.

Extension/Follow Up:

Suggested accommodations are suggested sequentially throughout the activities.

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Teacher Resource #1

Vignette

Hannah recently took her allowance to the "Dolls-4-Me" toy store and bought a new doll, Wendy Wheels, a wheelchair bound doll. Along with Wendy Wheels, Hannah bought a typical doll house. She was excited to bring the doll home and move her into her new home. Much to Hannah's surprise, Wendy's wheelchair was not able to fit through the front door. Hannah, consumed by disappointment, did not know what to do for Wendy.

Teacher Resource #2

Journal Reflection

Write at least 10 to 12 sentences about your experience as a physically challenged individual.

Teacher Resource #3

Adaptation Key

Bedroom

lower/thin carpeting

Bathroom

toilets are higher
sinks are higher/longer
lift for tub/toilet
swivel chair for tub
stool in tub
hand sprayer
grab bars
mirror

General Door/Hallways

lower window
railings
wider 3-4 ft.
ramps
open space
closet-lower coat racks

Living Room

switches
remotes
thermostats

Kitchen

lower cabinets
longer handles
lower stove
side-by-side refrigerator
washer/dryer-front open

Student Resource #1

You have had a class discussion about what happened as Hannah tried to get Wendy Wheels into her doll house. Suppose Wendy did get into the house. What other problems would she face traveling through the house?

In the chart below, list two other possible problems Wendy would have throughout the house. Also, make three changes that could be made to the house to accommodate Wendy's wheelchair.

Problems for Wendy in the typical doll house	Changes for the house to accommodate Wendy
1.	
2.	
3.	

Student Response #2

Using a wheelchair or an office chair with wheels, you and your triad will pretend you are Wendy Wheels in her doll house. Remember you are in a wheelchair; you will not have use of your legs.

You will take turns holding the following jobs:

Person A	Wheelchair bound individual
B	Note taker
C	Speaker

Travel around your school to complete the following activities. Take notes on what you experienced.

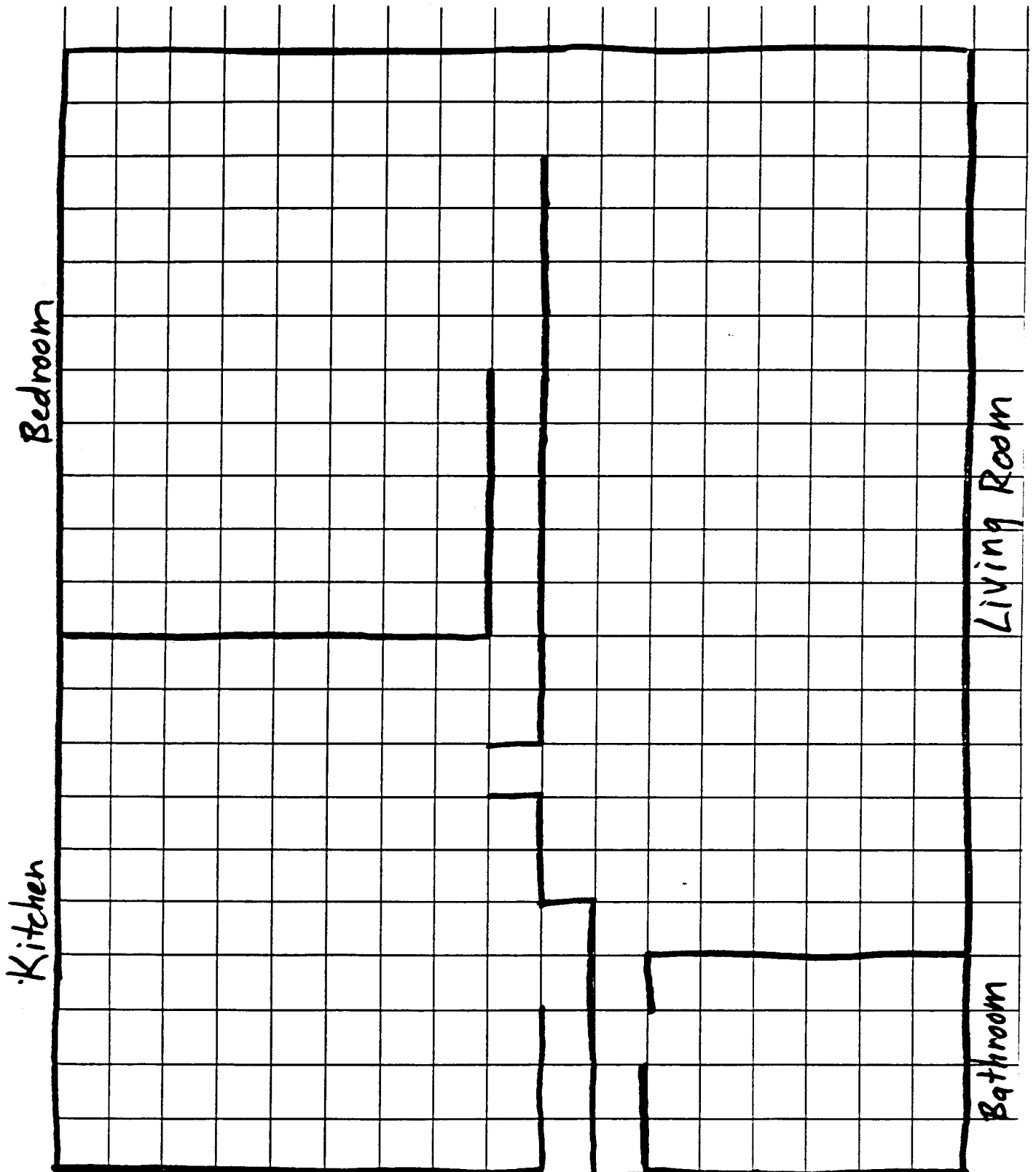
Activities	What did you experience
1. Simulated bathroom activity	
2. Going to get something from your locker	
3. Entering and exiting the school building	

Student Resource #3A

House Plan Directions

Place cubes representing items found in a house. The length, width and height are given for the items (see Student Resource #3C). Place the items in the correct rooms on the house plan.

Typical Doll House Plan



Student Resource #3C

Items in kitchen:	L	W	H
Washer/Dryer	2	2	3
Range	2	2	3
Refrigerator	2	2	6
Microwave Stand	2	2	4
Table	3	3	3

Items in bedroom:

Waterbed	6	5	2
Dresser	6	4	2
T.V. stand	2	2	4

Items in bathroom:

Tub	4	3	2
Toilet	2	2	2
Sink	2	2	2

Items in living room:

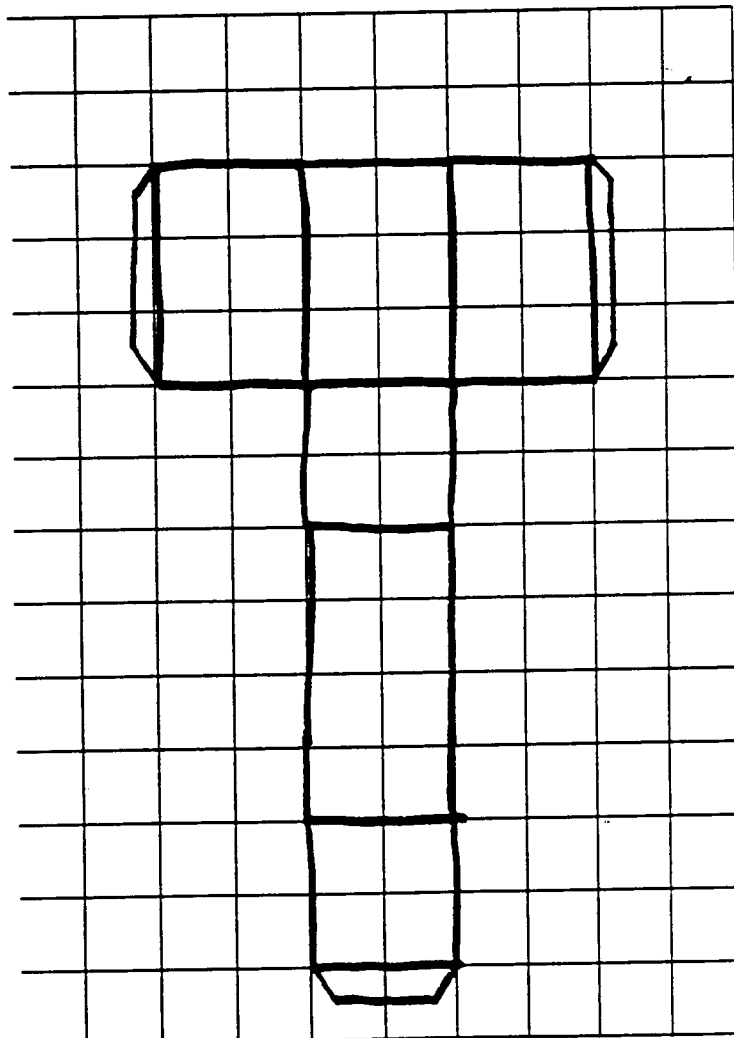
Large Screen T.V.	6	4	6
Tables and Chairs	10	4	4
100 gallon tank	10	6	6

Student Resource #4

Wendy Wheels' Rectangular Prism

Construct this rectangular prism using the following pattern. Cut out the pattern and tape or glue it together.

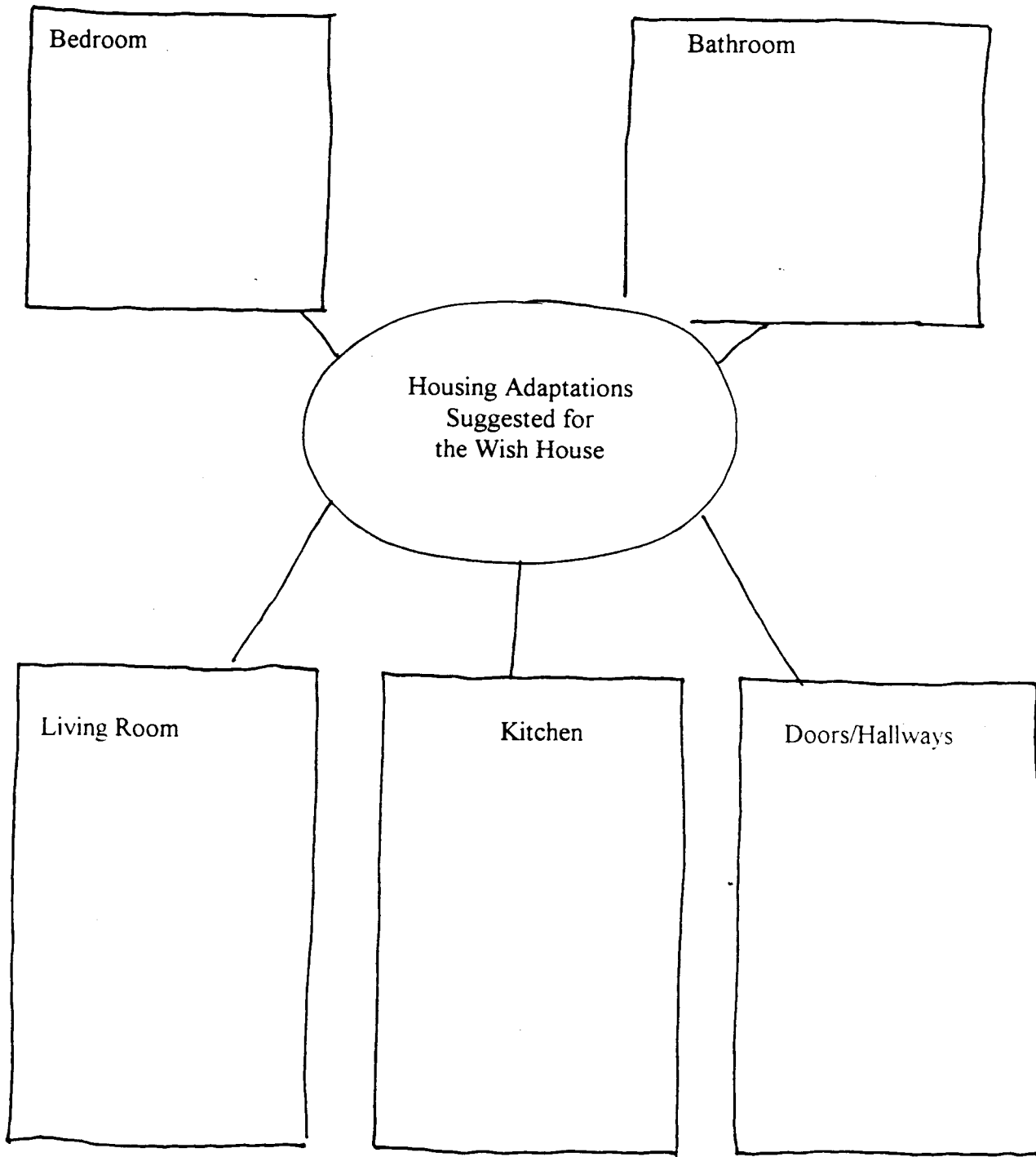
Your rectangular prism is 2cm x 3cm. This rectangular prism represents the space Wendy Wheels takes up in her house. After household items are in the house plan, have "Wendy" travel through her house.



Student Response #5

Adaptation Web

Please fill in each box with your suggested adaptations to the typical doll house.



Student Resource #6

Wendy Wheels Persuasive Writing Activity

Based on the problems that Wendy Wheels encountered in her dream home, write a persuasive letter to the of Dolls-4-Me corporation explaining the need to have a doll house that is handicapped accessible. Include suggestions to correct problems found by the class and any hazards or safety issues you feel need attention.

Complete your FAT-P organizer below. Be sure to include problems Wendy Wheels faced as she moved through the typical dollhouse to support your argument.

F:

A:

T:

P:

Student Resource #7

Writing Assessment Tool

Level	Expectations
4 Outstanding	<ul style="list-style-type: none">* Consistently used persuasive language to explain idea.* Used class data to support idea.* Used a variety of suggestions to accommodate Wendy Wheels in her new home.* Used correct business letter format.
3 Good	<ul style="list-style-type: none">* Used persuasive language to explain idea.* Used class data to support idea.* Used some suggestions for accommodation.* Used some parts of a business letter format.
2 Fair	<ul style="list-style-type: none">* Used little persuasive language to explain idea.* Used class data without supporting idea.* Used few suggestions for accommodation.* Used some parts of a business letter format.
1 Needs Improvement	<ul style="list-style-type: none">* Used no persuasive language to explain idea.* Mentioned little class data to support idea.* Used little to few suggestions for accommodations.* Did not use correct business letter format.